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NOTES AND NEWS.

The new Spanish Mathematical Society, of Madrid, Spain, has issued the third number of its journal called *Revista de la Sociedad Matematica Espanola*. According to a statement on page 96 of this journal the membership of this society has grown very rapidly, having surpassed 370 on the date of the first reunion which was held in Madrid on the 28 day of last June. M.

B. G. Teubner, of Leipzig, Germany, has published the first volume of *Euler's Complete Works*. It has been estimated that these works would comprise about forty large volumes and that the cost of publication would be about eighty thousand dollars. It may be remembered that the people of Switzerland and various learned societies, including the American Mathematical Society, contributed liberally towards this publication. Euler has been the most prolific mathematical writer up to the present time, and his works have had a very important influence on the development of mathematics during almost two centuries. This first volume is in German and deals with elementary arithmetic and elementary algebra. M.

A recent number of the *Rendiconti del Circolo Matematico di Palermo* contains the following interesting statistics in reference to the principal mathematical societies existing in 1911. The largest of these is the Circolo Matematico di Palermo, founded in 1884, and having a membership of 810 in August of the present year. Only a little more than one-third of these members, 286, resided in Italy. The second society in order of membership is the Deutsche Mathematiker-Vereinigung, founded in 1890, and having a membership of 751 at the beginning of the present year. Considerably more than one-half of these, 449, resided in the empire of Germany. The American Mathematical Society, founded in 1888, and having a membership of 641 at the beginning of the present year, is the third in order of size. As only 53 of these members resided outside of the United States, this society has a considerably larger resident membership than any other. The oldest society is the Mathematische Gesellschaft in Hamburg, founded in 1690, and having a membership of 111 at the beginning of the present year. M.

BOOKS.

Monographs on Topics of Modern Mathematics Relevant to the Elementary Field. Edited by J. W. A. Young. 8vo. viii+416 pages. Price, \$3.00. New York: Longmans, Green & Co.

Titles and Authors.—I. The Foundation of Geometry. By Oswald Veblen, Ph. D., Professor of Mathematics in Princeton University. II. Modern Pure Geometry. By Thomas F. Holgate, Ph. D., LL. D., Professor of Mathematics in Northwestern Univer-

sity. III. Non-Euclidean Geometry. By Frederick S. Woods, Ph. D., Professor of Mathematics in the Massachusetts Institute of Technology. IV. The Fundamental Propositions of Algebra. By Edward V. Huntington, Ph. D., Assistant Professor of Mathematics in Harvard University. V. The Algebraic Equation. By G. A. Miller, Ph. D., Professor of Mathematics in the University of Illinois. VI. The Function Concept and the Fundamental Notions of the Calculus. By Gilbert Ames Bliss, Ph. D., Associate Professor of Mathematics in the University of Chicago. VII. The Theory of Numbers. By J. W. A. Young, Ph. D., Associate Professor of the Pedagogy of Mathematics in the University of Chicago. VIII. Constructions with Ruler and Compasses; Regular Polygons. By L. E. Dickson, Ph. D., Professor of Mathematics in the University of Chicago. IX. The History and Transcendence of π . By David Eugene Smith, Ph. D., LL. D., Professor of Mathematics in Teachers College, Columbia University.

Editor's Preface. "The purpose of this collection of monographs may be indicated by the following citation from the letter that was sent to those who were requested to act as authors.

"Among the various publications on mathematics that are being made, it would seem that there is room for a serious effort to bring within reach of secondary teachers (in service or in training), college students, and others at a like stage of mathematical advancement, a scientific treatment of some of the regions of advanced mathematics that have points of contact with the elementary field. Undoubtedly one of the most crying needs of our secondary instruction in mathematics to-day, is that the scientific attainments of the teachers be enlarged and their mathematical horizon widened; and I believe, that there is a large body of earnest teachers and students that are eager to extend their mathematical knowledge if the path can be made plain and feasible for them.

"A volume of monographs dealing with selected topics of higher mathematics might well be a useful contribution to the meeting of this need. Such monographs would aim to bring the reader into touch with some characteristic results and viewpoints of the topics considered, and to point out their bearings on elementary mathematics. They would therefore contain:

(1) A considerable body of results proved in full, so that the reader can materially extend his mathematical acquisitions by the reading of the monograph alone.

(2) Statement without proof of some leading methods and results, so as to give a bird's-eye view of the subject.

(3) A small number of references indicating what the reader may profitably take up after he has mastered the contents of the monograph."

Both the plan itself, and the invitation to act as author, were most cordially received; work on the monographs was promptly begun, has been carried through substantially as planned, and the results are now presented in this book."

Vocational Algebra. By George Wentworth and David Eugene Smith. 12mo. Cloth. 88 pages, Illustrated. Price, 50 cents. New York and Chicago: Ginn & Co.

"The time has arrived when algebraic language has such a well-defined place in trade journals, artisans' manuals, and handbooks of business that the workman in the shop and the business man in the office have each a practical need to interpret it. The growth of industrial and commercial classes, one of the most significant features of our present work in education, helps to create such a need, and the shop itself is not far behind the school in making it known. It is to meet the demand for the essentials of algebra thus required in preparation for the shop and commerce that 'Vocational Algebra' has been written. It presents exactly the topics that are needed in vocational classes, no more and no less. Any one who has mastered it will be able to understand all the algebra of ordinary trade or business. The book contains a wide range of general vocation problems, but is free from mere puzzles and from those technicalities with which neither teacher nor stu-

dent should be expected to be familiar. In addition to this applied work it offers a sufficient amount of drill in abstract algebraic forms to insure a mastery of all the principles involved.

"Throughout the formula and equation are continually reviewed and constitute the leading feature of every chapter."

The Elements of Plane and Spherical Trigonometry. By John Gale Hun and Charles Ranald MacInnes. 8vo. Cloth, 100 pages of Text, 92 pages of Tables, and 13 pages of Explanation of Tables. Price, \$1.35. New York: The Macmillan Co.

The material in this book has been used in pamphlet form from three to four years in Princeton University. The authors have attempted to present the essentials of subject in as brief and clear a manner as possible. Some space is devoted to the drawing of graphs of simple equations in polar coördinates because it is thought that such problems aid the student in getting a clearer idea of the way in which the functions vary with the change of angle. Many of the proofs are very brief though easily understood by the average student. F.

The Hindu-Arabic Numerals. By David Eugene Smith, Professor of Mathematics, Teachers College, Columbia University, and Louis C. Karpinski, Instructor in Mathematics, University of Michigan, Ann Arbor. 8vo. Cloth, 160 pages. Price, \$1.25. Boston: Ginn & Co.

"Although it has long been known that the numerals ordinarily employed in business and commonly attributed to the Arabs, are not of Arabic origin, and although numerous monographs have been written concerning their derivation, no single work has yet appeared in which the complete story of their rise and development has been told. In the preparation of this treatise the authors have examined every important book and monograph that has appeared upon the subject, consulting the principal libraries of Europe as well as America, examining many manuscripts, and sifting the evidence with greatest care. The result is a scholarly discussion of the entire question of the origin of the numerals, the introduction of the zero, the influence of the Arabs, and the spread of the system about the shores of the Mediterranean and into the various countries of Europe.

The work is illustrated with numerous facsimilies from early inscriptions and manuscripts, most of which have not heretofore been published in connection with this subject, and all of which contribute to a very marked degree to an understanding of the problem.

Such a contribution to history, to mathematics, and to education bearing the names of two authors of such prominence in the history of mathematics, should find a place in every library of importance, and upon the shelves of all who are interested in education in its broadest aspect."

The Progress of Physics, During the 33 years (1875-1908). Four Lectures Delivered to the University of Calcutta During March, 1908. By Arthur Schuster, F. R. S., Ph. D., (Heidelberg), Sc. D. (Cantab), D. Sc., (Manchester and Calcutta), Dès. Sc. (Geneva).

8vo. Cloth, x+104 pages. Price \$1.25. Cambridge, England: The University Press: G. P. Putnam's Sons, American Agents.

When one has once begun the reading of these four lectures, one will not want to lay the book aside until its perusal is completed. The author's personal contact and acquaintance with the greatest scientist of the past thirty years, makes his descriptions of their experiments and discoveries of more than ordinary value. The frontispiece is an excellent portrait of James Clerk-Maxwell. F.

A Treatise on Electric Theory and the Problem of the Universe. Considered from the Physical Point of View, with Mathematical Appendices. By G. W. de Tunzelmann, B Sc., Member of the Institution of Electrical Engineers, Formerly Professor of Physics and Astronomy, H. M. S. "Britannia," Dartmouth. 8vo. Cloth. xxxi+654 pages. Price, \$4.50. Philadelphia: J. B. Lippincott & Co.

This volume is profoundly interesting and instructive. It deals with the most absorbing questions in the whole realm of matter. Some idea of the range of subjects discussed may be learned from the subjects of the twenty-four chapters into which the book is divided. Chapter I, Fundamental Electrical Phenomena; chapter II, Units and Measurements; chapter III, Meaning and Possibility of a Mechanical Theory of Electricity; chapter IV, The Ether; chapter V, The Ether as a Framework for Absolute Motion; chapter VI, Relations Between Ether and Moving Matter; chapter VII, Conditions in Gases and Dielectrics; chapter VIII, The Faraday-Maxwell Theory; chapter IX, The Electron Theory; chapter X, Magnetism and the Dissipation of Energy; chapter XI, Contact Electrification and Electrolysis; chapter XII, Optical Phenomena; chapter XIII, The Mechanism of Radiation; chapter XIV, Metallic Conduction and Radiation; chapter XV, General Phenomena of Radioactivity; chapter XVI, The Three Principal Types of Radioactivity; chapter XVII, Transformation of Radioactive Substances; chapter XVIII, The Ages of the Earth and Sun, and the Probable Origin of Radio-active Substances; chapter XIX, The Solar Corona, the Aurora and Comets' Tails; chapter XX, Radio-activity in Stars and Nebulae; chapter XXI, Arrangements and number of Electrons in an Atom; chapter XXII, Change in the Aspect of Fundamental Mechanical Principles; chapter XXIII, Gravitation and Cohesion; chapter XXIV, The Place of Mind in the Universe. While one may not accept all the theories advanced in this volume, one cannot help being interested in them, for further investigation and study may raise them to the rank of definite laws and principles. F.

Optical Geometry of Motion. A New View of the Theory of Relativity. Alfred A. Robb, M. A., Ph. D. Pamphlet, 32 pages. Cambridge: W. Heffer & Sons.

An essay which puts the theory of Relativity in mathematical dress.

F.

Elements of Trigonometry. By Daniel A. Murray, Ph. D., Professor of Applied Mathematics in McGill University. 8vo. Cloth. ix+136 pages. Price, 75 cents. New York: Longmans, Green and Co.

This is a shorter course than the author's former text-book entitled *Plane Trigonometry*. The omission of many notes and of several topics in the former and a more condensed treatment of others enables him to present the essentials in this abbreviated form.

F.